

# ***Interactive comment on “In situ observations of meteorological variables and snowpack distribution at the Izas Experimental Catchment (Spanish Pyrenees): The importance of high quality data in sub-alpine ambients” by Jesús Revuelto et al.***

## **Anonymous Referee #1**

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### General Comments

The manuscript by Revuelto et al presents a meteorological and remotely sensed snow cover dataset for the Izas Experimental Catchment, an alpine basin located in the Spanish Pyrenees, for the period 2011 to 2016. Snow cover measurements include spatially distributed snow depth obtained by terrestrial laser scanning and snow covered area over time by oblique terrestrial photography, which was projected orthogo-

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nally to the terrain. Although the meteorological record length is relatively short and there are certain gaps and missing components (e.g. precipitation data are missing for most of the period, which is unfortunate), this represents an important contribution and the snow cover data are of high potential value for model development and testing work, and comparisons of snow accumulation and distribution patterns among different alpine environments. For this reason the manuscript should be published. However, there are several areas where the manuscript could be improved and further details would benefit the reader and users of the published data. Not least is the fact that the English is of rather poor quality and requires editing to meet the standards of this journal. There are number of major grammatical errors and sentences and phrases that are either confusing or incorrect (too many in fact for me to point out every instance), and thus I would recommend that the authors seek to have the manuscript edited by a language professional.

### Specific Comments

Page 1. In the title and abstract, sub-alpine environments are referred to as “ambients” and the area of the site is referred to as its “extension”. These are not the appropriate or best choice of words.

Page 1, line 21. There is no description of long-wave radiation measurements in the manuscript and no such data provided, other than the IR100 infrared surface temperature measurements.

Page 1, line 32-33. The phrase “till the date” is an example of a grammatical mistake that requires correction by a language professional.

Page 2, line6. I am confused by what is meant by “controlled by the timing of snow distribution”. Perhaps this is something that could be clarified.

Page 2, line 28. The work “spam” is a typographical error.

Page 5, section 3. Perhaps the authors could include some more detail on the specific

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conditions in the immediate vicinity of the meteorological station. For example, is the vegetation sparse and the site relatively open? Is the nearby terrain flat?

Page 5, line 28. Do the authors mean to say the gauge is located 15 m away from the AWS tower?

Page 6, line 1. I am confused by the expression “average the evolution”. Does this mean that the conditions are representative? The temperature measurements are not the spatial average. This is likely a phrase that could be clarified with proper language editing.

Page 7, line 28. “significant smooth” is a grammatical error.

Page 8, section 3.5. What is the sensor height of the radiometer?

Page 8, line 30-31. The phrase “from the ground being obtained snow depth subtracting to his value the observed distance” does not make sense as written. The word “his” is a typo.

Page 9, line 5-10. What is the orifice height of the Geonor gauge?

Page 9-10, section 4.1. Is there any information on error assessment of the snow depths obtained by the terrestrial laser scanner for any (but ideally multiple, or all) of the acquisitions? This is quite important to be able have confidence across the range of measured depths, and at different distances from the scanner position. As it stands, this is an omission and there should be some description of how well this approach performed in the manuscript.

Page 10-11, section 4.2. Similar as for the TLS snow depth, it is important to include some type of error assessment for the positional accuracy of the re-projected photos for snow covered area measurement. Were there any independent ground control points (i.e. that were not used in the correction procedure of Corripio) that could be used to verify how well the imagery fit to the true locations over the landscape? This would be useful toward placing some error bounds around the snow covered area derived from

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this imagery.

Page 11, line 14. Discarding due to “snow presence” is due to snow obscuring the camera as I understand it. Is this correct?

Page 12, line 25. “thought” is a typo; this should be “through”.

Page 12, line 26. There is a period in front of the J for the first authors name.

Page 12, line 27. I think that “found” is a typo. Should this be “fund”?

Page 17, figure 1. The font on the figure inset map is illegibly small. Could this be made clearer by using larger font?

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